

certain limits, be replaced by others, immediately if the lesion be slight, gradually if serious.—A contribution to the theory of quadratic forms, by G. Morera.

July.—A case of extraordinary hirsuteness, by Prof. Giovanni Zoja. The author refers briefly to a Spanish girl observed by him at Pavia in 1881, who was above the average height, yet whose hair, when unbound, swept the ground by several centimetres. Some of the tresses measured 180 to 187·3 centimetres.—Meteorological observations made at the Brera Observatory, Milan, during the month of June.

SOCIETIES AND ACADEMIES

SYDNEY

Royal Society of New South Wales, May 5.—Annual Meeting.—Prof. Liversidge, F.R.S., President, in the chair.—The President stated that 27 new Members had been elected during the year, and the total number on the roll April 30 was 492. The Clarke Medal for the year 1886 had been awarded to Prof. L. G. de Koninck, M.D., of Liège, in recognition of his distinguished scientific attainments, and more particularly of his valuable contributions to our knowledge of the Palæozoic fossils of New South Wales. During the year the Society held eight meetings, at which the following papers were read:—Presidential Address, by H. C. Russell, B.A., F.R.A.S.—Notes on flying-machines, by L. Hargrave.—On a system of accurate measurement by means of long steel ribands, by G. H. Knibbs.—Local variations and vibrations of the earth's surface, by H. C. Russell, B.A., F.R.A.S.—Some causes of the decay of the Australian forests, by Rev. P. MacPherson, M.A.—The history of floods in the Hawkesbury River, by J. P. Josephson, A.M.I.C.E.—The Ringal of the North-Western Himalaya, by Dr. Brandis, F.R.S. (communicated by Baron von F. Müller, K.C.M.G., F.R.S.).—Notes on experiments in mounting the *Amphipleura pellucida* in media having a higher refractive index than Canada balsam, by Dr. W. Morris, F.R.M.S.—Notes on the characters of the Adelong Reefs, by S. H. Cox, F.C.S., F.G.S.—Stone implements of the aborigines of Australia and some other countries, by Rev. P. MacPherson, M.A.—On a form of flying-machine, by L. Hargrave.—On a new form of anemometer, by H. C. Russell, B.A., F.R.A.S.—The Medical Section held eight meetings, at which eighteen papers were read, and the Microscopical Section eight, at which three papers were read. The number of donations received was 1420 volumes and pamphlets, and 310*l.* expended in the purchase of books, &c., for the library. The Society has issued the following list of subjects, with the offer of the Society's bronze medal and a prize of 25*l.* for each of the best researches if of sufficient merit:—Series vi. to be sent in not later than May 1, 1887; (No. 20) on the silver ore deposits of New South Wales; (No. 21) origin and mode of occurrence of gold-bearing veins and of the associated minerals; (No. 22) influence of the Australian climate in producing modifications of diseases; (No. 23) on the Infusoria peculiar to Australia. Series vii., to be sent in not later than May 1, 1888: (No. 24) anatomy and life-history of the Echidna and Platypus; (No. 25) anatomy and life-history of Mollusca peculiar to Australia; (No. 26) the chemical composition of the products from the so-called Kerosene Shale of New South Wales.—The following Officers and Council were elected for the ensuing year:—President: C. Rolleston, C.M.G.; Vice-Presidents: H. C. Russell, B.A., F.R.A.S.; Dr. Leibius, M.A.; Hon. Treasurer: R. Hunt, F.G.S.; Hon. Secs.: Prof. Liversidge, F.R.S.; F. B. Kyngdon, F.R.M.S.; Council: Hon. Dr. C. K. Mackellar, A.M., M.L.C.; C. Moore, F.L.S.; P. R. Pedley, Dr. J. Ashburton Thompson, C. S. Wilkinson, F.G.S.; Dr. H. G. A. Wright.

PARIS

Academy of Sciences, July 26.—M. Jurien de la Gravière, President, in the chair.—On the quantitative analysis of ammonia, by M. Th. Schlesing. The author's process of analysis, based on distillation in presence of magnesia, having been questioned by M. Berthelot and others, he has made some fresh experiments, here described, which fully confirm the accuracy of the results already obtained.—Observations on the oldest sedimentary groups in the north-west of France, by M. Hébert. The region here dealt with is the northern section of Brittany and Normandy, where the most ancient sedimentary

rocks are the clay-slates of Saint-Lô and the widely diffused purple conglomerates. The former, which are quite distinct from the mica-schists, gneiss, and other primitive crystalline schists, form the fundamental feature throughout the department of La Manche, stretching far eastwards into Calvados, and westwards into Brittany. They assume almost everywhere a vertical or nearly vertical disposition, and are remarkably homogeneous, being almost totally destitute of any organic remains. The whole system seems to be posterior to the granitic pudding of Granville.—On the meteorological station of l'Aigoual, by M. F. Perrier. Since the beginning of July this station has been in full activity, and has been furnished by M. Houdaille, of Montpellier, with maxima and minima thermometers, a psychrometer, an evaporimeter, and a registering hygrometer. In the neighbourhood other instruments have been fitted up, including Tonnellot and Richard barometers, a large pluviometer, and a Campbell heliograph. Regular observations have already begun to be taken on this peak, which stands at an altitude of 1567 metres above sea-level, on the water-parting between the Atlantic and Mediterranean basins. The present temporary erections will soon be replaced by a solid structure, for which a grant of 4800*l.* has been made by the Minister of Agriculture.—Remarks accompanying the presentation of vol. xii. of the "Mémoires du Dépôt de la Guerre," by Col. F. Perrier. The first part of this volume describes the instruments and apparatus employed in the various geodetic operations connected with the new measurement of the meridian of Paris, with an exposition of the methods of observation. In the second are embodied all the observations taken from 1871 to 1884 between Perpignan and Paris by MM. Perrier, Bassot, and Defforges, at seventy-two stations belonging to the meridian of France.—Note on Gen. Meusnier's projected aérostatic machine, by M. Létonné. The album here referred to is a photographic reproduction of an atlas now in the military aérostatic establishment of Chalais (Meudon), and containing sixteen plates of designs relative to a projected aérostatic machine prepared by Gen. Meusnier between the years 1784 and 1789. Eight tables are added, giving the coefficients of resistance of various substances suited for the construction of this machine.—On the pressure that exists in the contracted section of a gaseous current, by M. Hugoniot. This paper is supplementary to that inserted in the *Comptes rendus* of June 28, showing that the results of M. Hirn's experiments on the flow of gases are in harmony with the laws of hydrodynamics and with the formula of Weisbach or Zeuner, which is a direct consequence of those laws. Some objections raised by M. Hirn himself are here disposed of, and the general conclusion confirmed by fresh argument.—On the velocity of light in the sulphuret of carbon, by M. Gouy. The experiments here described have been carried out with a revolving mirror analogous to that of Foucault, and capable of 800 revolutions per second by means of compressed air. The results correspond with those recently obtained by Mr. Michelson (*American Journal of Science*, and *NATURE*, March 11 and April 22, 1886).—Note on the construction of an absolute electrometer adapted for the measurement of very high potentials, by MM. E. Bichat and R. Blondlot. By an improvement introduced into the construction of their already described electrometer, the authors have produced an instrument possessing absolute sterility and capable of measuring potentials corresponding to explosive distances of 2·5 centimetres. A model of the apparatus has been constructed by M. D. Gaiffe, of Nancy.—On the slow decomposition of the chlorides in their extended dissolutions, by M. G. Fousserau. Further experiments with the chlorides of aluminium and magnesium, with the double chloride of rhodium and sodium, the bichloride of platina and the sesquichloride of gold show that the recently described phenomenon of decomposition probably extends to a numerous class of chlorides.—On the definition of the coefficient of self-induction in an electro-magnetic system, by M. G. Cabanellas.—On the numerical laws of chemical equilibria, by M. H. Le Chatelier. The formula for the numerical law of the chemical equilibrium of a gaseous system,

$$\log p^n p'^n \dots p''^n \dots - \frac{273}{0\cdot542} \int \frac{Q}{T^2} dT = \text{const.},$$

announced by the author in the *Comptes rendus* for November 16 and December 28, 1885, is here established by rigorous demonstration.—Fresh experiments on the decomposition of hydrofluoric acid by an electric current, by M. H. Moissan. These experiments show conclusively that the gas separated by electro-

lysis from anhydrous hydrofluoric acid or from the hydrofluorate of fluoride is fluor, as already anticipated.—On the separation of antimony from tin, by M. Ad. Carnot. This difficult process has been successfully accomplished by a method analogous to that already employed by the author for the separation of zinc and cadmium. It is based on the simultaneous employment of oxalic acid and of the hyposulphide of soda.—On the manganites of soda, by M. G. Rousseau.—On the determination of the absolute acidity of the fluids present in the organism, and on some phenomena connected with the saturation of orthophosphoric acid, by M. Ch. Blarez. From the experiments here described it is inferred that the exact determination of the absolute basic property of phosphoric acid is impossible, there being nothing absolute in this property itself; also that it is impossible to determine the absolute acidity of the animal fluids, of whose constituent principles phosphoric acid and the phosphates form part.—On some thermic data relating to the chromates, by M. Paul Sabatier.—Thermic researches on the seleniures, by M. Charles Fabre. The author here deals with the heat of formation of the seleniure of dissolved ammonium, and with some problems connected with the seleniures of lithium.—Researches on some crystallised basic sulphates, by M. Athanasesco. By employing the process used by Friedel for the artificial reproduction of brochantite, the author has succeeded in obtaining fine crystallised subsulphates of cadmium, zinc, alumina, iron, and uranium. By a slightly modified process he afterwards obtained some subsulphates of nickel, cobalt, mercury, and bismuth.—Researches on some crystallised arseniates, by M. Coloriano. All these arseniates, except the bibasic, are insoluble in water, and resist the acids. They were obtained by the various processes of Debray, Friedel and Sarasin, Verneuil and Bourgeois.—On a nitrated camphor and its saline and alcoholic combinations, by M. P. Cazeneuve.—Discussion on the reactions of pilocarpine, by MM. E. Hardy and G. Calmels.—Physiological function of the pulmonary tissue in the exhalation of carbonic acid, by M. L. Garnier.—On a universal chromatometer, by M. L. Andrieu (de l'Etang). The apparatus here described and illustrated is intended to define and measure the colours of liquids by giving them numerical expression.—On the Anguillules of smut, by M. G. Penetier. From his recent experiments the author concludes that these parasites preserve the vital spark for a period of fourteen years, but no longer.—On the milky secretion of pigeons during incubation, by MM. Charbonnel-Salle and Phisalix.—Researches on the structure of the brain of the Myriapods, by M. G. Saint-Remy.—Researches on the Miocene vegetation of Brittany, by M. Louis Crie.—On the picturesque group of rocks collectively known by the name of Montpelier-le-Vieux (Aveyron), by M. E. A. Martel.

BERLIN

Physiological Society, July 2.—Dr. Joseph reported on the results of experiments instituted with a view to ascertaining the influence of the nerves on the skin. Following up the experiments of Waller, he had excised a somewhat large piece of the second cervical nerve peripherically from the ganglion, and a few days thereafter had observed behind the ear of the side operated upon a perfectly circumscribed place on which the hairs had fallen out, but which, beyond the baldness, showed no symptom of change. The cutting through of the posterior root of the cervical nerve had not the same effect, but the extirpation of the second cervical ganglion had that result. The microscopical examination of the hairless spots showed absence of hair papillæ and of the hair root, while the other constituents of the skin remained unchanged. No abnormal vascularisation of the spots in question nor of the ears generally was observed. Seeing that the protected situation of the depilated spot and the presence of sensibility went to disprove the idea of a mechanical removal of the hairs, while the result of the anatomical examination attested that the hairs were exclusively affected without the vascular system having undergone any essential alteration; the speaker was therefore of opinion that the results of his investigations might be taken as demonstration of the existence of trophical nerves. After the separation of the peripheral nerve no change in the ganglion was ever observed, whereas the dissection of the posterior root gave rise to atrophy.—Dr. H. Virchow next demonstrated four drawings representing the incurvations of the vertebrate columns of different human types and manifesting the surprisingly great differences obtaining among the normal vertebrate columns of a Russian, an Italian, a male German existing in model, and a pregnant German wife. From these figures it was to be

concluded that the breadth of the normal fluctuations of these incurvations was great. On the study of the vertebral column it was to be observed that it was indeed comparable to an elastic rod which became expanded by lateral pressure, and compressed by pressure from the top, but that it was composed of several parts independent of one another (the lumbar, pectoral, and cervical parts) which were adapted to the special functions of the respective sections of the rump. By a simple model he made these differences among the different sections apparent. On a second model he showed that very marked displacements in the centre of gravity at the uppermost part of the body were equalised, not by compensatory incurvations, but by bendings in the undermost joints. The speaker then demonstrated by curves rendered in paste the incurvations shown by the vertebral column of dead bodies when the ligaments of the vertebrate bodies in front or behind, in the dorsal or lumbar vertebrae, were cut through. The curves became more marked after the elastic ligaments of the upper vertebrae were cut through, but they hardly changed at all when the lowest tendinous ligaments were cut through. The interstitial ligaments consisted of a soft elastic kernel and of distended ligamentous fibres compressing the kernel. The action of the expending kernels, which made the vertebral column firmer, was illustrated by a third model. The speaker had taken exact measure of the situation of the kernel in each disk on vertebrate columns sawn through, and when he combined together these points on a drawing, he obtained a more marked incurvation than that possessed by the vertebral column. Thus altogether apart from the muscular activity, the different forces acted on the incurvation of the vertebrate column, which for the rest appeared to be different in the different races.

BOOKS AND PAMPHLETS RECEIVED

"Indigenous Fodder Grasses of North-West India" (Roorkee).—"Die Ergebnisse der Untersuchungsfahrten, S. M. Knbt." "Drache" (Mittler und Sohn, Berlin).—"Russland," by Von Waldeck (Freytag).—"Der Ozean," by Dr. O. Krümmel (Freytag).—"Die Schweiz," by Dr. Z. Z. Egli (Freytag).—"Vital Statistics of the City of Glasgow," by Dr. J. B. Russell (Macdougall).—"Beiträge zur Biologie der Pflanzen," Viertes Band, Zweites Heft (Kern, Breslau).—"Transactions of Vassar Brothers' Institute and its Scientific Section," vol. iii. part 1.—"Partiality in Unity" (Wynman).—"Bulletin of the U.S. Geological Survey," Nos. 24, 25, 26 (Washington).—"Speculations from Political Economy," by C. B. Clarke (Macmillan).—"Annalen der k. k. Universitäts Sternwarte in Wien," ii. iii. Band, 1883, by E. Weiss (Wien).—"Report on the Migration of Birds," 7th Report, 1885 (Macfarlane and Erskine).

CONTENTS

PAGE

The Book of Duck Decoys	309
Cometary and Planetary Orbits	310
Letters to the Editor :—	
The Silver-Blue Cloudlets again.—Prof. C. Piazzi Smyth	311
The Bright Clouds.—T. W. Backhouse	312
Aurora.—G. H. Kinahan; Donald Cameron	312
Halos and Mock Suns.—E. Douglas Archibald; Robert H. F. Rippon. (<i>Illustrated</i>)	313
A Singular Case.—Prof. Henry H. Giglioli	313
The Weather at Caracas.—Dr. A. Ernst	313
The Indivisibility of Certain Whole Numbers.—M. A. Quadruped Duck.—Rev. Edward Geoghegan	314
Physiological Selection : an Additional Suggestion on the Origin of Species. By Dr. George J. Romanes, F.R.S.	314
Tropical Fruits. By D. Morris	316
Microscopic Organisms in Air and Water. (<i>Illustrated</i>)	318
The Recent Volcanic Eruption in New Zealand. By Arch. Geikie, Director-General of the Geological Survey of the United Kingdom. (<i>With a Map</i>)	320
Notes	322
Astronomical Phenomena for the Week 1886 August 8-14	324
The Scientific Development of the Coal-Tar Colour Industry. By Prof. R. Meldola, F.R.S.	324
Drying up of Siberian Lakes	329
University and Educational Intelligence	330
Scientific Serials	330
Societies and Academies	331
Books and Pamphlets Received	332